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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	09/698,195
Applicant:	:	Jan F. Jannink
Filed:	:	October 30, 2000
Title:	:	SYSTEMS AND METHODS FOR VISUALIZATION OF DATA SETS CONTAINING INTERRELATED OBJECTS
TC/A.U.	:	2672
Examiner	:	WANG, Jin Cheng
Atty. Docket No.	:	NAPSP277
Date:	:	August 12, 2005

CERTIFICATE OF MAILING

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Signed: Lauren Leschauer

Lauren Leschauer

TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION -- 37 CFR 192)

Commissioner for Patents
Mail Stop: Appeal Brief- Patents
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is in furtherance of the Notice of Appeal filed in this case on June 8, 2005. The Notice of Appeal was received by the USPTO on June 13, 2005.

This application is on behalf of:

☐ Small Entity ☒ Large Entity

Pursuant to 37 CFR 1.17(f), the fee for filing the Appeal Brief is:

☐ $250.00 (Small Entity) ☒ $500.00 (Large Entity)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply:

☐ Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

Months	Large Entity	Small Entity
☐ one	$120.00	$60.00
☐ two	$450.00	$225.00
☐ three	$1,020.00	$510.00

☒ If an additional extension of time is required, please consider this a petition therefor.

☐ An extension for __ months has already been secured and the fee paid therefor of $_____is deducted from the total fee due for the total months of extension now requested.

☒ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition and fee for extension of time.

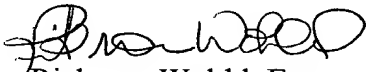
Total Fees Due:

Notice of Appeal Fee	$500.00
Extension Fee (if any)	$
Total Fee Due	**$500.00**

☒ Enclosed is Check No. 13630 in the amount of $500.00.

☒ Charge any additional fees or credit any overpayment to Deposit Account No. 50-0850, (Order No. NAPSP277).

Respectfully submitted,
MARTINE PENILLA & GENCARELLA, LLP



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

EX PARTE JANNINK

Application for Patent

Filed October 30, 2000

Application No. 09/698,195

FOR:

SYSTEMS AND METHODS FOR VISUALIZATION OF DATA SETS CONTAINING INTERRELATED OBJECTS

APPEAL BRIEF

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Appeal, Commissioner for Patents, P.O. Box 1450, Alexandria, VA, 22313-1450, on August 12, 2005.

Signed: Lauren Leschauer

Lauren Leschauer

MARTINE PENILLA & GENCARELLA, LLP
Attorneys for Applicants

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I. REAL PARTY IN INTEREST

The real party in interest is Napster, LLC, the assignee of the present application.

II. RELATED APPEALS AND INTERFERENCES

The undersigned is not aware of any related appeals and/or interferences.

III. STATUS OF THE CLAIMS

A total of 27 claims were presented during the prosecution of the present application. Applicants canceled claims 2, 4, 6, 14, and 24-25. Applicant appeals the final rejection of claims 1, 3, 5, 7-13, 15-23, and 26-27.

IV. STATUS OF THE AMENDMENTS

An Amendment was filed subsequent to Final Rejection and was not entered.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

In one embodiment of the invention, Applicant claims a method of information structuring in a data set containing a plurality of interrelated objects. The method comprises ranking related objects based upon relationship strength. The ranking includes, for each related object to a selected object, calculating an affinity value between each of the related objects and the selected object based upon one or more criteria. The ranking further includes ordering each of the related objects in the data set according to the affinity value between the related object and the selected object. The method of information structuring in a data set containing a plurality of interrelated object further includes clustering related objects, and computing a number of affinity charts per object. The one or more criteria includes a subjective measurement (page 6, lines 3-7, lines 8-23, page 7, lines 9-20, Figs. 1, 2, 3, 7, 8).

In another embodiment of the invention, Applicant claims a method of generating a graphical layout. The method includes selecting a principal node for the graphical layout, and generating at least one affinity chart in connection with the principal node. The at least one affinity chart comprises an affinity curve. Finally, the method of generating a graphical layout includes sequentially establishing related items along the at least one affinity chart by rank (page 7, lines 15-20, page 8, lines 1-12. Fig. 3).

In yet another embodiment, Applicant claims a method for providing graphical visualization of items from data sets. The claimed method comprises determining, for a plurality of items from the data set, a set of properties. The set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. The method further includes applying local rankings of the relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k (page 6, lines 8-23). Next, the method includes generating a graphical visualization by presenting results separately for each item in a data set. The presentation is adjusted to avoid information overlap and overload. Finally, the method includes providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j (page 6, lines 3-7, lines 8-23, page 7, lines 9-20, Figs. 1, 2, 3, 7, 8).

In yet a further embodiment, Applicant claims a method for providing graphic visualization of data sets containing a large number of items from said data sets The method comprises employing continuous curves including spiral segmentation in order to connect items relating to a primary item at different intensity levels. Additionally, the method includes adjusting the graphic visualization to avoid information overlap and overload. The items related to the primary item are grouped by strength of affinity. The method further provides for providing an affinity chart, and spacing each related item individually with each item placed in a non-overlapping position, and for presenting items with large numbers of related items with multiple affinity charts. In the case of multiple affinity charts, the method includes providing a first affinity chart to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strongly related items. Further, the method includes using curves to represent a relationship of items related to a particular item positioned at a starting point for the curve. Distance along the curve represents a strength of affinity to the item at the starting point of the curve. Finally, the method provides for selectively employing color and shading gradations and curve thickness gradations to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other (page 8, line 1 – page 9, line2, Fig3).

In a further embodiment, Applicant claims a method for providing visualization of arbitrarily large data sets using low and local computational resources. The method comprises determining, for at least a plurality of said data sets, a set of properties. The set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. The method includes determining at least one primary item for the visualization, and applying local rankings of the relationships between terms, by ranking a first relational set of items that relate to the primary item, and ranking a second relational set of items to which the primary item relates, thereby ranking an affinity to each primary item to the first relations set of items and to the second relational set of items. The method further includes generating a visualization by presenting results separately for each item in a predetermined data set and adjusting the presentation to avoid information overlap and overload. Additionally, the method includes providing separate presentation for each item of the data set by generating an affinity chart for each primary item in the data set, thereby displaying items closely related to a selected primary item, with the primary item placed prominently in the affinity chart, and placing items which are more strongly related to the primary items closer to the primary item. Further, the method includes expressing closeness along curves or shaped segments, connected or emanating from the primary item's position. The expression of closeness includes completely or partially straight shaped segments. The method also provides for employing continuous curves including spiral segments, in order to connect items relating to a primary item at different intensity levels, and for adjusting the visualization to avoid information overlap and overload. The items related to the primary item are grouped by strength of affinity. The method then includes providing an affinity chart, and spacing each related item individually with each item placed in a non-overlapping position. The items are presented with large numbers of related items with multiple affinity charts, and in the case of multiple affinity charts, the method includes providing a first affinity chart to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strongly related items. Curves are used to represent a relationship of items related to a particular item positioned at a starting point for the curve, with distance along the curve representing a strength of an affinity to the item at the starting point of the curve. Finally, the method includes selectively employing color and shading gradations and curve

thickness gradations are to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other(page 8, line 1 – page 9, line17, Figs. 3-4).

In another embodiment, Applicant claims a method for providing visualization of large interrelated data sets. The method comprises determining a relationship strength of related items in a data set, and for each item in the data set, ranking related items based on the relationship strength. The method further includes clustering related items based on said ranking, and computing a number of affinity charts per item. Next, the method includes establishing clusters of related items. The steps of ranking related items based on the relationship strength and computing the affinity charts are repeated until a desired information structure is achieved. Finally, the method includes positioning a principal node prominently in the affinity chart, and generating entries in said affinity chart emanating from the principal node for each of said clusters of related items (page 6, line 8 – page 7, line 20, Figs. 3-4).

A further embodiment is provided in which Applicant claims a computer readable medium containing computer program instructions for providing visualization of items from data sets. The computer program instructions containing instructions for determining, for at least a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. There are also program instructions for applying local linkings of relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which j relates, thereby ranking the affinity to each item j to item sets i and k. Further, program instructions provide for generating a visualization by presenting results separately for each item in a predetermined data set and adjusting the presentation to avoid information overlap and overload. Finally, program instructions are included for providing separate presentations for each item of the data set by generating an affinity chart for each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items with are more strongly related to j closer to j (page 6, lines 3-7, lines 8-23, page 7, lines 9-20, Figs. 1, 2, 3, 4, 5 7, 8).

In one more embodiment, Applicant claims a system for providing visualization of items from data sets at a first computer operably coupled to a second computer over a communications network. The system includes a computerized

server associated with said second computer. The computerized server includes data set visualization software executable on said computerized server and configured to:

a) determine, for a plurality of said data sets, a set of properties. The set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items;

b) apply local rankings of the relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k;

c) generate a visualization by presenting results separately for each item in a data set and adjusting the presentation to avoid information overlap and overload; and

d) providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j (page 6, lines 3-7, lines 8-23, page 7, lines 9-20, Figs. 1, 2, 3, 4, 5 7, 8).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds for rejection to reviewed on appeal are as follows:

Claims 1-3, 5, 7-13, 15-23, and 26-27 were finally rejected under 35 USC §102(e).

VII. ARGUMENT

A. Claims 1, 3, 5, 7-13, 15-23, and 26-27 are not anticipated by Chilimbi et al.

Claims 1, 3, 5, 7-13, 15-23, and 26-27 stand finally rejected under 35 USC §102(e) as being anticipated by Chilimbi et al. (U.S. Patent No. 6,330,556).

Chilimbi et al. teach the reordering of data fields to improve the efficiency of cache line access. Temporal data regarding the referencing of such fields is obtained, and a tool is used to construct a field affinity graph of temporal access affinities between the fields. Data fields are represented as nodes on the field affinity graph,

and edges between the nodes are weighted to indicate field affinity. A first pass greedy algorithm is implemented to attempt to combine high affinity fields in the same cache line or cache block. A class co-location scheme is used to ensure that temporally correlated classes are placed in close proximity in cache blocks.

In order for a reference to anticipate a claim under 35 USC §102, each and every element as set forth in the claim must be found in the reference, either expressly or inherently described. MPEP 2131. Applicant respectfully submits that Chilimbi et al. do not anticipate Applicant's claims 1, 3, 5, 7-13, 15-23, and 26-27.

While the question of whether a reference is analogous art to an application may not be relevant to the ultimate question of whether the reference anticipates, it is a relevant consideration in the determination of the meaning of words common to the application and the reference. The Office has ascribed the same meanings to words found in thoroughly dissimilar documents addressing distinctly different areas of technological and/or academic endeavor. The standard for rejection under 35 USC §102 is that each and every element as set forth in the claim must be found in the reference, not that each and every word be found in both documents. Applicant respectfully submits that the present application is patentable over the Chilimbi et al. reference under 35 USC §102 for at least the simple reason that the patent to Chilimbi et al., fails to disclose each and every element as set forth in Applicant's claims 1, 3, 5, 7-13, 15-23, and 26-27.

In one embodiment, Applicant claims a method of information structuring in a data set containing a plurality of interrelated objects. The method includes ranking related objects based upon relationship strength. The ranking of the related objects includes, for each related object to a selected object, calculating an affinity value between each of the related objects and the selected object based upon one or more criteria. Looking at just those elements, Applicant is claiming a method in which a ranking of related objects is accomplished by calculating an affinity value between each of related objects and selected objects. The claim has identified a plurality of interrelated objects, a selected object, and related objects. The claimed method includes ranking related objects based on relationship strength, and calculating an affinity value between each of the related objects and the selected object.

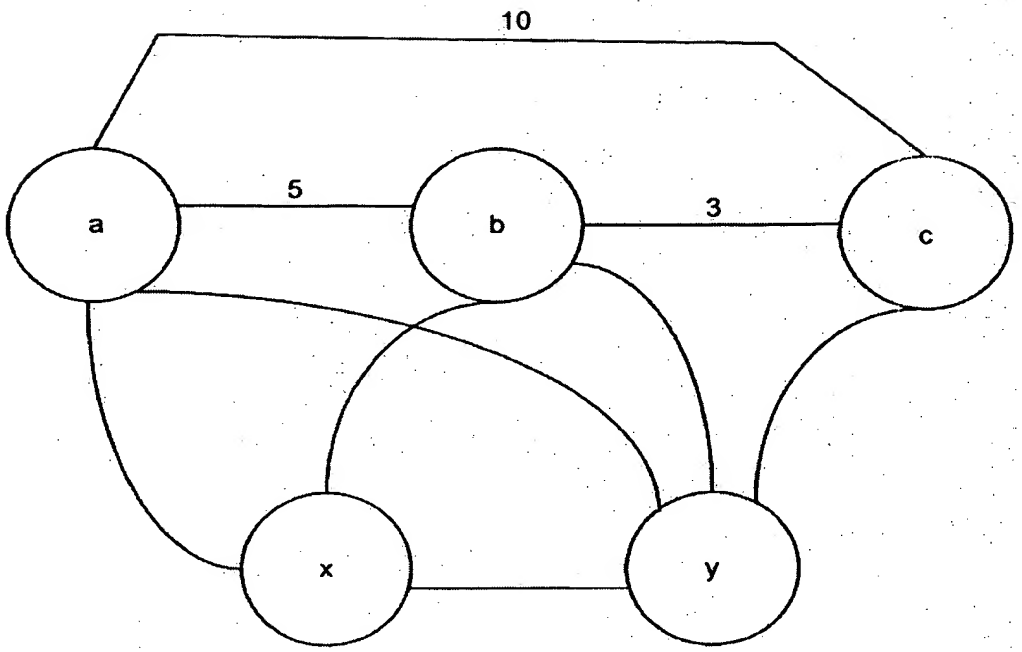
The Chilimbi et al. reference teaches the reordering of data structures to improve the efficiency of cache access. "Data structures are partitioned into heavily referenced and less heavily referenced portions. The partitioning is based on profile

information about field access counts" (col. 2, lines 36-38). "Temporal data regarding the referencing of such fields is obtained, and a tool is used to construct a field affinity graph of temporal access affinities between the fields. Nodes in the graph represent fields, and edges between the nodes are weighted to indicate field affinity. A first pass greedy algorithm attempt so combine high affinity fields in the same cache line or block" (abstract).

The Chilimbi et al. reference fails to teach (or suggest) each and every element as set forth in Applicant's claims 1, 3, 5, 7-13, 15-23, and 26-27. Chilimbi et al. does not teach a plurality of interrelated objects, a selected object, and related objects, nor a method that includes ranking related objects based on relationship strength between each of the related objects and the selected object. Chilimbi et al. does not teach examining an affinity between a selected object and related objects. Chilimbi et al. looks at data structures, measures temporal access, determines which data structures are commonly or most likely accessed in close temporal frequency, and then structures cache lines or blocks to group structures with greater temporal affinity together to increase frequency. There is no one selected object with affinity to other related objects, but rather an examination of a plurality of data structures and the grouping of such structures together for greater efficiency.

Figure 3 of the Chilimbi et al. reference clearly illustrates that the reference does not teach each and every element claimed by Applicants. Specifically, the reference does not teach, for example, ranking related objects based on relationship strength, and calculating an affinity value between each of the related objects and the selected object:

FIG. 3



As shown in Figure 3, there is no ranking of related objects based on relationship strength, and calculating an affinity value between each of the related objects and the selected object. Figure 3 illustrates an affinity graph as constructed according to the teaching of Chilimbi et al. Fields in relational data bases are represented as nodes. Temporal access is measured for each of the nodes, and temporal access affinity is measured between and among each of the nodes. Thus, an affinity between node "a" and each of nodes "b," "c," "y," and "x" is determined along with the affinity between node "b" and nodes "a," "c," "x," and "y," and the affinity between node "c" and nodes "a," "b," and "y," and between node "y" and nodes "a," "b," "c," and "x." This does not teach between each of the related objects and the selected object because there is no one selected object, but rather affinities between and among a plurality of fields. This does not teach each and every element as set forth in Applicant's claims, and therefore does not anticipate Applicant's claims under 35 USC §102.

The Applicant's field of invention is "visualization systems and methods and more particularly ... systems and methods for enabling visualization of data sets containing large numbers of objects" (page 1 of Applicant's specification as filed,

lines 13-15). Accordingly, Applicant has claimed a method of information structuring in a data set containing a plurality of interrelated objects. Information structuring, as claimed, enables or facilitates visualization of data sets. The method claimed recites the ranking of related objects in the data set containing a plurality of interrelated objects, the ranking including calculating an affinity value between each of the related objects and a selected OBJECT, and the ordering (which might also be recited as "sequencing" or "prioritizing") of each of the related objects in the data set according to the calculated affinity value between the related object and the selected object. The claimed method recites elements that pertain to the information structuring and manipulation of a plurality of interrelated objects in a data set.

Chilimbi et al. do not teach each and every one of these same elements. The field of the Chilimbi et al. invention is "computer memory management and in particular to optimizing cache utilization by modifying data structures" (col. 1, lines 32-34). It is noted that the word "data" is identified as common to both the instant application and the reference patent. However, the present application is in the field of visualization of data sets, and the reference patent is in the field of optimizing cache utilization by modifying data structures. As stated above, whether or not the art is analogous may not be relevant to the determination of anticipation, it is relevant to the interpretation of the language used in both the application and the reference. Applicant respectfully submits that data sets and data structures are not the same, and are not the same elements under 35 USC §102.

According to the Chilimbi et al. reference, "data structures which are sometimes implemented as classes which are instantiated as objects" are used by computer applications (col. 2, lines 14-16). Data structures, then, are not data sets, but another common word, "object," is introduced. However, the "object" disclosed by Chilimbi et al. is the object of object oriented programming. Such an object is generally known as the central concept in the object-oriented programming programming paradigm. Objects consist of run-time structures containing two kinds of members generally accepted as data members and methods that access the data members in predefined ways. This is consistent with the language of Chilimbi et al. which further states that "Object oriented programming method provide a means to encapsulate data members (variables) and member functions (methods) that operate on that data into a single entity called a class" (col. 5, lines 42-45). Further, "An object is an instance of a class. The data members of an object are attributes that are

stored inside the computer memory, and the method are executable computer code that act upon this data" (col. 5, lines 48-51).

The "objects" taught by Chilimbi et al. are the objects of object oriented programming. The data structures are just that, "Fields in relational databases [that] may also be thought of as individually addressable data elements" (col. 6, lines 12-13). The Chilimbi et al. reference does not teach a method of information structuring in a data set containing a plurality of items. According to the abstract, in its entirety:

> Fields which are individually addressable data elements in data structures are reordered to improve the efficiency of cache line access. Temporal data regarding the referencing of such fields is obtained, and a tool is used to construct a field affinity graph of temporal access affinities between the fields. Nodes in the graph represent fields, and edges between the nodes are weighted to indicate field affinity. A first pass greedy algorithm attempts to combine high affinity fields in the same cache line or block. Constraints are used to reject invalid combinations of fields. Data structures such as class are partitioned into heavily referenced and less heavily referenced portions. The partitioning is based on profile information about field access counts with indirect addressing used to reference the less heavily referenced partitioned class. A class co-location scheme is used to ensure that temporally correlated classes are placed near each other in cache blocks. A generational garbage collection algorithm is use to ensure that objects that are most heavily referenced are more likely to remain in cache blocks.

Chilimbi et al. teach data elements in data structures of cache lines and cache blocks, but do not teach *information structuring in a data set and ranking of interrelated items in a data set*. Applicants claim the ranking of the related *objects in a data set*, and such objects are not "objects" of object oriented programming, and cannot be reasonably interpreted to be objects of object oriented programming, instantiation of a class, etc. Chilimbi et al. do not teach each and every element as claimed by Applicant.

Applicant has also claimed the selecting of a principal node for a graphical layout. The Chilimbi et al. reference also does not teach this element. Applicant respectfully submits that Chilimbi et al. do not teach the selection of a principal node. As illustrated above in Figure 3 of the Chilimbi et al. reference, no one node is selected as a principle node, since all nodes are interconnected. The reference, therefore does not teach each and every element of Applicant's claims, and therefore does not anticipate the claims under 35 USC §102.

Applicant claims that the at least one affinity chart comprises an affinity curve. The Office supports the rejection by a vague reference to Figures 2-3, 5, and 7. Figure 2 is pseudo code for a program written in a language such as C which includes individually addressable data elements (col. 6, lines 3-5). Figure 3 is a field affinity graph (col. 6, line 58). Figure 5 illustrates the process of computing the increase in configuration locality from adding field *x* to an existing layout (col. 8, lines 32-34). Figure 7 is a block representation of the resulting recommended layout of two cache blocks that relate to the simplified data structure A defined in Figure 2 (col. 10, lines 15-17). The Chilimbi et al. does not teach an affinity curve.

Applicant further claims a method for providing graphical visualization of items from data sets. The method includes determining, for a plurality of items from the data set, a set of properties. The set of properties includes a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items. The method further includes applying local rankings of the relationships between terms. The applying is accomplished by **ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k.** The method then includes generating a graphical visualization by presenting results separately for each item in a data set and adjusting the presentation to avoid information overlap and overload. The method further includes **providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set. The presentation thereby displays items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j.**

As can be seen in Figure 3 above, the Chilimbi et al. reference clearly does ***not*** teach this claim element. A plurality of nodes are illustrated as described above, with a ranking of an affinity between and among all of the nodes. There is no **ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k,** and there is no **providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set. The presentation thereby displays items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j.**

The reference does not teach each and every element claimed by Applicant, and therefore does not anticipate the application under 35 USC §102.

Applicant further claims expressing closeness along curves or shaped segments, connected or emanating from the primary item's position. The expression of closeness includes completely or partially straight shaped segments. Continuous curves including spiral segments are employed in order to connect items relating to a primary item at different intensity levels. Applicant also claims adjusting the visualization to avoid information overlap and overload. The items related to the primary item are grouped by strength of affinity. An affinity chart is provided, and each related item is spaced individually with each item placed in a non-overlapping position, and items are presented with large numbers of related items with multiple affinity charts, and in the case of multiple affinity charts, a first affinity chart is provided to visually represent a set of most strongly related items and next or subsequent related affinity charts are provided to visually represent less strongly related items. Applicant claims providing for using curves to represent a relationship of items related to a particular item positioned at a starting point for the curve, with distance along the curve representing a strength of an affinity to the item at the starting point of the curve. And, Applicant claims selectively employing color and shading gradations and curve thickness gradations are to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other.

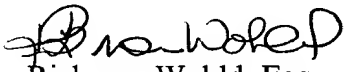
As illustrated in reference Figure 3 above, the Chilimbi et al. reference does not teach each and every element as claimed by Applicant. Applicant points out that, "coloring" as used by Chilimbi et al. does not teach "coloring" as used by Applicant. Chilimbi et al. specifically defines that "coloring segregates heavily and infrequently accessed elements in non-conflicting cache regions" (col. 13, lines 9-10). Because Chilimbi et al. does not teach the generation of visualizations of data sets, Chilimbi et al. does not teach tint or hue, shading, intensity, saturation, continuous curves, spiral segments, etc. Applicant, in reciting the generating of visualizations of data sets, recites coloring as used in Applicant's specification as filed. Applicant recites coloring to more clearly define and illustrate a visualization. Applicant has not recited and has not described "coloring" as related to segregating heavily and infrequently accessed elements in non-conflicting cache regions as utilized by Chilimbi et al. The Chilimbi et al. reference, therefore does not teach each and every

element as set forth in Applicant's claims, and therefore does not anticipate the application under 35 USC§102.

Applicant has also claimed visualization of arbitrarily large data sets using low and local computational resources. Chilimbi et al. teach nothing of providing visualization of arbitrarily large data sets *using low and local computational resources*. While Chilimbi et al. is directed to maximizing efficient use of cache, expenditure of computational resources is simply not addressed in the reference. Chilimbi et al. simply do not teach each and every element and therefore does not anticipate Applicant's claimed invention under 35 USC §102.

The patent to Chilimbi et al. fails to teach each and every element of Applicant's claims, and fails to teach each and every element as set forth in Applicant's claims. The Chilimbi et al. reference, therefore, does not anticipate Applicant's claims under 35 USC §102. Applicant respectfully submits that the final rejection of claims 1, 3, 5, 7-13, 15-23, and 26-27 under 35 USC §102(e) as being anticipated by Chilimbi et al. is improper and should be withdrawn.

Respectfully submitted,
MARTINE PENILLA & GENCARELLA, LLP



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APPENDIX A

CLAIMS ON APPEAL

1. A method of information structuring in a data set containing a plurality of interrelated objects, comprising:

ranking related objects based upon relationship strength, the ranking including

for each related object to a selected object, calculating an affinity value between each of the related objects and the selected object based upon one or more criteria; and

ordering each of the related objects in the data set according to the affinity value between the related object and the selected object;

clustering related objects; and

computing a number of affinity charts per object, wherein the one or more criteria includes a subjective measurement.

2. (Canceled)

3. A method, as in claim 2, wherein the one or more criteria includes an objective measurement.

4. (Canceled)

5. A method of generating a graphical layout, comprising:

selecting a principal node for the graphical layout;

generating at least one affinity chart in connection with the principal node, the at least one affinity chart comprising an affinity curve; and

sequentially establishing related items along the at least one affinity chart by rank.

6. (Canceled).

7. A method, as in claim 5, wherein the at least one affinity chart further comprises a list of related items.

8. The method according to claim 5 further comprising positioning the selected principal node at a prominent location in the graphical layout.

9. The method according to claim 5 wherein for each related item in an affinity chart the size of the item is computed.

10. The method according to claim 5 wherein gradients are used to suggest item affinity level.

11. The method according to claim 10, wherein the gradient further comprises a color gradient.

12. The method according to claim 10, wherein the gradient further comprises a size gradient.

13. The method according to claim 5 wherein provision is made to allow a sufficient vertical and horizontal displacement interval to prevent overlap of related items.

14. (Canceled)

15. A method for providing graphical visualization of items from data sets, the method comprising:

determining, for a plurality of items from the data set, a set of properties, the set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items;

applying local rankings of the relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k;

generating a graphical visualization by presenting results separately for each item in a data set and adjusting the presentation to avoid information overlap and overload; and

providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j.

16. The method of claim 15, further comprising expressing closeness along shaped segments, emanating from j's position.

17. A method as in claim 16, wherein the shaped segments further comprise curved segments.

18. The method of claim 15, further comprising:

employing continuous curves including spiral segments, in order to connect items relating to the selected item (j) at different intensity levels;

adjusting the visualization to avoid information overlap and overload, the items related of item (j) grouped by strength of affinity;

providing an affinity chart, and spacing each related item individually with each item placed in a non-overlapping position;

presenting items with large numbers of related times with multiple affinity charts, and in the case of multiple affinity charts, providing a first affinity chart to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strong related times;

using curves to represent a relationship of items related to a particular item positioned at a starting point for a curve, with the distance along the curve representing a strength of affinity to the item at the starting point of the curve; and

selectively employing color and shading gradations and curve thickness gradations are to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other.

19. A method for providing graphic visualization of data sets containing a large number of items from said data sets, the method comprising:

employing continuous curves including spiral segmentation in order to connect items relating to a primary item at different intensity levels;

adjusting the graphic visualization to avoid information overlap and overload, the items related to said primary item grouped by strength of affinity;

providing an affinity chart, and spacing each related item individually with each item placed in a non-overlapping position;

presenting items with large numbers of related items with multiple affinity charts, and in the case of multiple affinity charts, providing a first affinity chart to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strongly related items;

using curves to represent a relationship of items related to a particular item positioned at a starting point for the curve, with distance along the curve representing a strength of affinity to the item at the starting point of the curve; and

selectively employing color and shading gradations and curve thickness gradations are to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other.

20. A method for providing visualization of arbitrarily large data sets using low and local computational resources, the method comprising:

determining, for at least a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items;

determining at least one primary item for the visualization;

applying local rankings of the relationships between terms, by ranking a first relational set of items that relate to the primary item, and ranking a second relational set of items to which the primary item relates, thereby ranking an affinity to each primary item to the first relations set of items and to the second relational set of items;

generating a visualization by presenting results separately for each item in a predetermined data set and adjusting the presentation to avoid information overlap and overload;

providing separate presentation for each item of the data set by generating an affinity chart for each primary item in the data set, thereby displaying items closely related to a selected primary item, with the primary item placed prominently in the affinity chart, and placing items which are more strongly related to the primary items closer to the primary item;

expressing closeness along curves or shaped segments, connected or emanating from the primary item's position;

said expression of closeness including completely or partially straight shaped segments;

employing continuous curves including spiral segments, in order to connect items relating to a primary item at different intensity levels;

adjusting the visualization to avoid information overlap and overload, the items related to the primary item grouped by strength of affinity;

providing an affinity chart, and spacing each related item individually with each item placed in a non-overlapping position;

presenting items with large numbers of related items with multiple affinity charts, and in the case of multiple affinity charts, providing a first affinity chart to visually represent a set of most strongly related items and providing next or subsequent related affinity charts to visually represent less strongly related items;

using curves to represent a relationship of items related to a particular item positioned at a starting point for the curve, with distance along the curve representing a strength of an affinity to the item at the starting point of the curve; and

selectively employing color and shading gradations and curve thickness gradations are to emphasize the curve's role in conveying affinity strength, while placing items so they do not overlap or crowd each other.

21. A method for providing visualization of large interrelated data sets, the method comprising:

determining a relationship strength of related items in a data set;

for each item in the data set, ranking related items based on the relationship strength;

clustering related items based on said ranking;

computing a number of affinity charts per item;

establishing clusters of related items;

repeating the steps of ranking related items based on the relationship strength and computing the affinity charts until a desired information structure is achieved;

positioning a principal node prominently in the affinity chart; and

generating entries in said affinity chart emanating from the principal node for each of said clusters of related items.

22. A method as in claim 21, wherein said step of generating entries in said affinity chart further comprises laying out graphs of one per cluster of related items.

23. A method as in claim 21, wherein said step of generating entries in said affinity chart further comprises populating a list of related items.

24-25. (Canceled)

26. A computer readable medium containing computer program instructions for providing visualization of items from data sets, said computer program instructions containing instructions for:

determining, for at least a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items;

applying local linkings of relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which j relates, thereby ranking the affinity to each item j to item sets i and k;

generating a visualization by presenting results separately for each item in a predetermined data set and adjusting the presentation to avoid information overlap and overload; and

providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items with are more strongly related to j closer to j.

27. A system for providing visualization of items from data sets at a first computer operably coupled to a second computer over a communications network, comprising:

a computerized server associated with said second computer, said computerized server including data set visualization software executable on said computerized server and configured to:

determine, for a plurality of said data sets, a set of properties, said set of properties including a relationship to each other of the subsets of items in the data set, and a value applied to the relationships between the items;

apply local rankings of the relationships between terms, by ranking items i that relate to each item j, and ranking all items k to which item j relates, thereby ranking the affinity of each item j to item sets i and k;

generate a visualization by presenting results separately for each item in a data set and adjusting the presentation to avoid information overlap and overload; and

providing separate presentation for each item of the data set by generating an affinity chart for each item j in the data set, thereby displaying items closely related to selected item j, with item j placed prominently in the affinity chart, and placing items which are more strongly related to j closer to j.

APPENDIX B

EVIDENCE APPENDIX

NOT APPLICABLE

APPENDIX C

RELATED PROCEEDINGS APPENDIX

NOT APPLICABLE